Remarks

Claims 1-28 were originally presented in the present application, of which claims 19-28 have been withdrawn from consideration. Claims 1-18 have been examined on the merits and, for reasons set forth below, are believe to define allowable subject matter.

The undersigned affirms the election of claims 1-18 in response to the restriction requirement made between claims 1-18 and claims 19-28. This election is made **without** traverse.

The Examiner is thanked for indicating claims 4-12, 14, 15, 17 and 18 to be allowable if rewritten in independent form. However, at this time, the allowable claims have not been rewritten in independent form.

Claims 1, 2 and 13 have been rejected under 35 U.S.C. Section 103(a) as being unpatentable over Chen et al. (PG Publication 2001/0009724) in view of any of Hogg (USP 4,390,377), Arnaud et al. (USP 6,093,267) or JP 11-289645. Applicant traverses these rejections for reasons set forth hereafter. It is submitted that the person of ordinary skill would not have been motivated to modify Chen's method of manufacture in a manner that would render obvious the claimed inventions.

Claim 1 generally recites a method of forming an electrical contact that comprises plating a core wire with at least one conductive coating to form an electrical contact. The contact experiences internal stresses created by the at least one conductive coating. Claim 1 further recites induction heating the electrical contact for a predetermined period of time to at least partially relieve the internal stresses created by the at least one conductive coating.

Claim 13 generally recites a method for fabricating a micro-contact component that comprises electroplating a metallic coating on a plurality of core wires to form micro-contacts, mounting the micro-contacts onto a substrate, and induction heating the micro-contacts and substrate to anneal the micro-contacts.

In the outstanding Office Action, it is maintained that Chen teaches the limitations of claims 1 and 13, except for induction heating as a method of heat treatment, and that each of the secondary references indicate that "it is well-known in the art to heat treat coated wires by an induction heating process." In the Office Action, it is further maintained that, based on the disclosures of the secondary references, it would have been obvious to employ induction heating as the heat treatment step in the Chen process.

Applicant strongly disagrees. The manufacturing steps of Chen, Hogg, Arnaud and the JP '645 patent are not so readily interchangeable. Each of Chen, Hogg, Arnaud and the JP '645 patent teach manufacturing processes that are tailored to specific products and specific materials comprised within such products. It is significant that Chen's process is for making an electrical contact, whereas the processes of Hogg, Arnaud and the JP '645 patent are not. Instead, the process of Hogg is for making a continuous galvanized wire, such as steel wire, having a bright, silvery luster. The JP '645 patent concerns a process for making a wire for over head power lines, while Arnaud's process is concerned with making wire for use in automotive tires.

These differences between the product manufactured by Chen, as compared to those manufactured by Hogg, Arnaud, and the JP '645 patent, are significant as each product is made of different materials and has different properties. Chen's contact comprises a gold skeleton that is wire bonded to a semiconductor substrate base (paragraph 44). The gold skeleton is coated with a nickel-cobalt alloy in a plating bath that includes saccharin as an additive (paragraph 45).

In the Hogg patent, the galvanized wire comprises a wire core that has a zinc coating deposited thereon. The coated wire is then passed through a molten bath of zinc and aluminum sufficient to provide in the galvanized bath an eutectic alloy having a melting point below that of zinc (column 4, lines 15-25). Hogg explains the process as follows at column 4, lines 34-41:

> The present invention is based on the discovery that substantial thicknesses of a coating of zinc and of about 4 to about 6% aluminum can be applied to and solidified on ferrous wire to not only provide protection and a silvery luster to the wire but also to enable the drawing down of the wire to a less cross-sectional area without total loss of coating or sacrifice of brightness or corrosion resistance after annealing. In a preferred aspect of this invention a coating of zinc is first electrolytically applied to the wire in order to enhance the bondability of a subsequently applied coating of 4% to 6% aluminum-zinc.

Given the coating of aluminum on Hogg's wire, Hogg teaches that the annealing process must be done in a fashion to ensure the following:

> In order to provide a more useful product, the wire is subsequently annealed in such fashion that the aluminum-zinc coatings are not substantially diminished or destroyed and under such conditions that the coating is not rendered more brittle or more weakly bonded to the wire by excessive promotion of the iron-zinc-aluminum alloy action or under such conditions that the surface of the coating is not substantially oxidized or otherwise adversely affected (column 8, lines 6-14).

Hogg expressly teaches how to implement the annealing process as follows:

> A particularly useful arrangement is to guide the coated wire in a vertical direction down through an induction coil of suitable characteristics to heat the wire to a temperature of

> 1200 to 1500° F, with a residence time of about 0.28 or less to 0.48 or more seconds. The vertical disposition of the wire tends to avoid the form of a teardrop-like cross-section because of flow of the coating due to gravity and tends to retain the circular cross-section configuration of the wire (column 8, lines 25-38).

It is submitted that it would not have been obvious to modify Chen's process to include Hogg's induction heating step since Hogg teaches induction heating for a galvanized wire which is entirely different than the claimed electrical contact and the contact of Chen. Hogg's galvanized wire has a zinc-aluminum coating, while Chen's contact has a nickel-cobalt coating. Hogg's process is very concerned with thinning the wire or creating a tear-drop shaped wire. Hogg's process heats the wire to 1200° F to 1500° F, while the temperature range taught by Chen for the nickel-cobalt plated contact is 300° C to 350° C. Hogg's process heats the wire for 0.29 or 0.48 seconds, while Chen heats the contact for 10 to 60 minutes. In view of these differences, it would not have been obvious to modify Chen's process based on the teachings of Hogg in a manner that would render obvious the claimed invention.

The Arnaud patent also fails to provide motivation to modify Chen in the necessary manner. Arnaud concerns a process for improving the bead structure of a tire. Arnaud explains that the traveling cables within a tire may be induction heated as follows:

> The traveling cable is heated by induction in a protective atmosphere (cracked NH_3 or N_2,H_2). The recovery annealing is effected by electromagnetic conduction by causing induced currents to flow over a length of about 40 cm, the speed of treatment may be variable (80 m/min, for example), the system being adjusted to obtain a homogeneous heat treatment of the cable. The temperature noted on the surface of the cable and at the outlet of the inductor is on the order of 450° C (column 8, lines 21-28).

It is submitted that Arnaud's induction heating process for a tire cable is entirely different than the claimed electrical contact or Chen's contact. Arnaud's cable is made of different materials, requires different physical properties, and is embedded within a very different environment (e.g. a tire) as compared to the claimed electrical contact. Also, in the above noted example of Arnaud (relied upon in the outstanding office action), Arnaud suggests heating the cable at 450° C for a few seconds. In contrast, Chen uses a lower temperature for a much longer timer period.

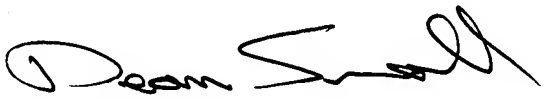
Finally, it is submitted that the JP '645 patent fails to make up for the deficiencies of Chen, Hogg and Arnaud. The JP '645 patent describes a process for manufacturing a wire for an overhead power line. The wire is annealed to remove distortion after placing an aluminum layer

on the wire. The advantage is that the wire offers good de-icing effect "at time of low tidal current by providing larger electro-magnetic induction heating".

The JP '645 patent is equally unrelated to an electrical contact and would not motivate the person of skill to modify Chen's process as asserted in the outstanding Office Action.

In view of the foregoing, it is submitted that claims 1 and 13 are not rendered obvious by the combined teachings of Chen, Hogg, Arnaud and the JP '645 patent.

Respectfully Submitted,



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